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ABSTRACT

This discussion of the use of computer output microform (COM) as a feasible alternative to the library card catalog includes a brief history of library catalogs and of microform technology since World War II. It is argued that COM catalogs are to be preferred to card catalogs, online catalogs accessed by terminals, and paper printouts. Advantages and disadvantages of film or fiche formats for a library catalog are explored in relation to retrieval performance, cost, and ease of use, and such features as updating procedures, readability, and possible patron reluctance to use COM are discussed in greater depth. It is concluded that COM appears to be the most viable answer to new demands placed on the library catalog. (SW)

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COMPUTER OUTPUT MICROFORM LIBRARY CATALOG: A SURVEY

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In the most simplistic sense COM is an acronym for "computer output microform," a product which is the result of the direct recording of computer output onto microforms without passing through any intervening stage as paper copy. Its possible applications are and have been many, but the central focus of COM as a product in this paper is as its application as a replacement for the traditional library surrogate file. As such the "COM catalog" may be defined as "a computer-formatted arrangement of bibliographic entries recorded on microform wherein several entries may be displayed for each title in the data base and one or more of the entries contain(s) unit-entry information."[1]

One can scarcely understand the emergence of COM and its possible application towards American libraries' quest for bibliographic control unless one has an understanding of the impact of the nearly simultaneous post-World War II explosion of information and the proliferation of computer technology. From the very outset there was at least a latent relationship between these manifestations of post-war America. Not only was the computer capable of retaining much of the raw data which fed the flames of research, but the products of the research themselves grew so great in number that computer-assisted access to them became viable--often virtually a necessity. Thus a logical nexus of the information explosion and computer technology became libraries, a traditional, central step in the flow of information from its origins to potential beneficiaries.

Long the primary access point into American libraries' holdings, card catalogs were straining to provide an acceptable level of service as early as twenty years ago. Even with maximum diligence, the catalog was beginning to break down. In certain instances then, as well as today, only the inertia of tradition was justifying its existence. As collections doubled and tripled following World War II, the number of cards to be filed became almost unmanagable. The lack of flexibility of a card file system was also becoming increasingly evident. The rapidly changing subject matter of the collections mirrored the changing world, but the subject entries and cross-references were often unmonitored and inadequate. The sheer size of some catalogs, let alone the catalog's apparent complexity, baffled, annoyed, or simply intimidated and discouraged the patron.[2]

As early as the 1960's, the idea began to be widely circulated that the American libraries' most venerable fixture, the card catalog, might not be perpetuated but with the assistance of computer technology, be completely bypassed. Put to practice, the technology has generally produced a computer paper printout catalog of the library's holdings. Although numerous problems have arisen, the advantages remain obvious--the computer can handle the information avalanche through its ability to store, manipulate, and rearrange vast amounts of data. It can also print out, faster than any typist can type, accessed information via a line printer. Nevertheless, the printer and its product, the fan-folded paper print-out, have generally proven to be a costly

bottleneck due to the time required for production and the number of copies desired. In addition, large collections produce unwieldy print-outs bound in heavy binders requiring a large amount of storage space.[3]

One alternative to the computer-generated printed catalog has been not to produce a hard copy of the catalog, but rather to access the surrogate file via a cathode ray tube (CRT). This has usually been prohibitive due to the cost and to the availability of a reliable on-line system. As a result, institutions have looked to technology for ways to be provided with a cost effective, efficient, yet compact, hard copy of their catalogs. Their needs were met by the early realization that if a photograph were taken of a CRT screen displaying data, time and thus cost could be cut considerably. Furthermore, if that photograph were in miniature, in the format of microform, a space savings would also result. Such were the origins of computer output microform and ultimately the COM catalog.[4]

Perhaps the earliest COM unit to appear was Model 100 produced by Stromberg Carlson in 1956. Technological advances were slow, and until this decade no major name fully entered the field (one suspects because the process combined the efforts of two highly specialized industries--computers and photographics). In 1969, there were only five hundred COM recorders in the United States; today one manufacturer has over one thousand in operation and a number of companies, including major microform companies (Bell & Howell, 3-M, Eastman-Kodak) are in the market with a staggering number of systems.[5]

The most fundamental difference in these computer microform systems as far as library application is concerned is not the nature of the bibliographic entries, which may be as imaginative or as traditional as the library desires, but the format the library chooses: film or fiche. The current trend in format is away from microfiche and toward 16 mm microfilm, long the standard British COM format. There are, of course, advantages and disadvantages in the use of both formats. First, there can be a selective fiche-to-fiche updating of the catalog with the fiche format; whereas the entire film surrogate file must be regenerated. Second, the loose fiche format has poor file integrity and is highly susceptible to misfilings, loss, or theft. On the other hand, film has superb file integrity, but has the disadvantage, at least in the present, of being confined to a limited-length reel. For large collections this necessitates the removal and rethreading of one or more reels or multiple readers at any single location.[6]

Many of the problems and advantages inherent in each format are the result of the equipment necessary to enlarge the microimages. Perhaps the chief advantage of the film over the fiche reader is that the library can pillage the often inadequately utilized microform room for some existing readers for use with the COM catalogs. The retrieval speed will be very slow (and exhausting) unless the machine is motorized. At any rate, unless the library's collections will fit on a single reel, almost any fiche reader is easier to use than threading open reel microfilm. Fiche readers have the additional

advantage of being available in a greater number of models at a cheaper price, and are less susceptible to breakdown than film readers. The ideal solution is to have a closed machine (cassette) for either fiche or film. At present, such fiche automatic retrieval machines are prohibitively priced. The cassette film machines appear to be the preferred system if a library's collection can be comfortably accomodated on the machine. They are expensive, but can be cost effective if weighed against the obvious advantage of eliminating the dangers of constant patron handling of the catalog.[7]

Since the cost of a COM production unit for a library's limited private use is almost always prohibitive, it is usually necessary for a library to deal with a COM service bureau. Thus, to acquire COM copies of the catalog requires physical transport of catalog data, usually stored on magnetic tape, to a vendor or service bureau, which most likely is industry-oriented and to whom the library's business accounts for a relatively inconsequential portion of its livelihood. This is a fact that may lead to unsatisfactory service, delays in the production process of the COM catalog, and in general, removes the production of the catalog from the institution's control. Fortunately, one common characteristic of early COM recorders has been virtually eliminated. Today, most COM units can accommodate a variety of brands of magnetic tapes, thus minimizing the chance of additional delays and costs of a conversion program.[8]

Nevertheless, the number of services are as bewildering as are the reliability and quality of the bureau's work.

Doris Bolef maintains that one should assume that there is little the vendor, if flexible, cannot technologically do to meet library requests.[9] COM recorders today can arrange bibliographic information in almost any way imaginable, including the elimination of all cross-references by including multiple entries. COM recorders can also offer retrieval coding, titling for microfiche, and row and column indexing. There are also any number of available formats: 16 mm, 35 mm, 70 mm, 82.5 mm, and 105 mm microfilm, and 4 X 6 inch fiche -- all in a number of reduction ratios.[10]

As great as the diversity of COM catalogs is, there are a number of salient, related features about their utilization that should be considered. Perhaps the most difficult initial problem that institutions face is whether COM would be suitable for their purposes. Of course, this is entirely dependent on a myriad of factors and on the circumstances of the institution. In general, to be a truly viable alternative, COM requires that an institution's catalog contain large numbers of items which either do not have to be 100 per cent up-to-date and/or do not justify on-line computer access, but which <u>are</u> frequently updated and require numerous copies.

The relative swiftness and procedure by which COM is produced permits a number of advantages over paper computer print-out. A reduced turn-around time <u>allows</u> for the COM catalog to be more flexible and of higher quality than traditional catalogs. The legibility of the COM catalog is consistent in its production, unlike the deteriorating legibility

with each additional paper print-out. It should also continue to be more legible throughout its use, since it is resistant to being soiled in the same manner as are cards or paper. Any susceptibility to scratching of fiche or film is overshadowed by the frequent updating which is so important in giving the COM catalog its flexibility. By allowing the contents of the catalog and its form to be readily changed over time, the COM catalog can be more responsive to any noticeable inconsistencies or to substantive changes in subject access points. COM also makes possible multiple full-body bibliographic entries. This is not only a convenience for the casual patron, but is an additional cost incentive to the special library where the user's time, when devoted to checking cross-references, is easily calculated in dollars and cents.[11]

The readability of the COM catalog (its computer typeography and its frequently unconventional or abbreviated entries) like that of the paper print-out is not as familiar as that of the traditional card catalog. The COM catalog does not easily allow the patron to simultaneously compare entries of two items of interest or allow the librarian to make useful notations or minor pen changes to entries in the surrogate file, as is possible on card and paper print-out catalogs.

Depending upon the size of the collection, the frequency the catalog is updated, and the number of copies produced, there can be considerable savings for institutions utilizing COM catalogs. One obvious consideration is the amount of staff time saved by not filing cards at the catalog, a process which

is often backlogged due to inadequate staff and the time-consuming nature of the task. More staff time can then be allotted for collection development or public services.

In addition to a savings in staff time, some libraries have maintained that COM is even cheaper to produce than paper print-out on the original run. Although this must be the exception, there is little doubt that the cost advantage over the computer print-out is greater for each additional copy of the catalog produced.[12] In switching from computer paper print-out to COM, the Los Angeles Public Libraries reported a savings of $82,000 in the first year.[13] The University of Guelph's McLaughlin Library realized nearly a $15,000 savings for eight copies of a COM catalog produced three times a year.[14]

As in any endeavor, it is difficult to put a price on increased service to the patron. It can only be crudely estimated by cost effectiveness. Nevertheless, the portable nature of the COM catalog offers many distinct user advantages over the bulky card catalog and the computer print-out catalog. Since COM is more compact than any traditional surrogate file and its cost effectiveness increases with the number of catalogs produced, there is little objection and perhaps there is even an incentive to provide a large number of catalogs for patron use. Once the initial cost of the job is absorbed, additional COM catalogs can be reproduced quickly and at a low cost, not necessitating, as with line printers, that all copies be produced at the same time.

The increased number of catalogs is in itself a security device. Damage to one copy of the catalog is not the disaster

it may be when a card file is mutilated. Also COM, like the print-out, can be located anywhere in the library. Not only is COM portable but its compactness and lightweight nature (often requiring only two per-cent of the space of the paper print-out) can allow increased access for handicapped individuals who could not utilize the card catalog unassisted, or who struggle to manipulate the heavy bound print-outs.. This lightweight feature can also be advantageous in transporting the finished product from the service bureau and allowing patrons to utilize the catalog almost anywhere they have access to a reader. As such, COM's role in systems cooperation has barely been realized. Its reproduction capability for large quantities and mailability at a much reduced cost can allow an increased number of libraries to have an up-to-date copy of each other's holdings. A not unlikely development could be that a library, upon production of a new catalog, would distribute its old one to reciprocating libraries.[15]

To most individuals, the chief difficulty with COM catalogs is the very one that enhances its portable, lightweight assets -- its miniaturization. Wherever there is a COM catalog there is a requirement for viewing equipment of some kind. The sheer cost of the equipment is only one facet of the problem. As previously noted, there is a bewildering variety of formats, machines, and reduction sizes. A commitment to format and a reduction ratio, once made, is virtually irreversible. The sober nature of this decision is made even more imperative in

that the institution must purchase an adequate number of viewers to allow browsing of the catalog and to avoid excessive waiting in line. If there are too few viewers and all of them are constantly in use, the patron may feel a certain amount of pressure not to spend too much time viewing the catalog and frustration may result.[16]

A major (perhaps paramount) concern for a library in the use of the COM catalog format should be the awareness of the problems that hinder the full utilization of microforms in general -- a pervasive patron uneasiness in the use of any format except print on paper. In an observation on the use of a COM catalog at the University of Toronto, Ellen Altman noted that just as many and sometimes more people were using the no longer updated card catalog as were viewing the film.[17] Of course, patron familiarity, like staff familiarity, gradually dispels the original fears. By most accounts, the switch to COM is shortly followed by an overall increase in catalog and library use.[18] Nevertheless, initial patron and staff resistance cannot be dismissed. It must be the responsibility of the institution to insure that each staff member becomes familiar with the COM catalog and is at ease in the use of it. In making the decision to switch to a COM format of bibliographic control, the long-term commitment of the institution's staff to be willing and eager to instruct the patron in the use of the COM catalog is just as important as properly maintaining and servicing the catalog and viewing equipment.

CONCLUSION

It is frequently and convincingly argued that COM catalogs are only an intermediate step between the traditional surrogate file and the adoption of an on-line system.[19] Although such an assessment goes virtually unchallenged, it begs the question of what libraries must do until on-line systems become affordable and reliable. Flexibility will soon be a necessity as AACR II catalog rules are put into practice by the Library of Congress in the 1980's. Many libraries will be forced to follow the Library of Congress in freezing their own card catalogs and to transfer the bibliographic data of subsequent acquisitions to computer tapes or discs. COM today appears to be the most viable alternative to meet these new demands, and if widely utilized, COM will probably become available in an increasing number of options and at a lower cost. The complexities surrounding a library's decision to switch to COM are many, and require a careful weighing of the options and the long and short-term objectives of the library.

NOTES

[1]SOLINET Committee on COM, Computer Output Microfilm (COM): An Alternative to Card Catalogs for SOLINET Members (Bethesda, Maryland: ERIC Document Reproduction Service, ED 139 437, 1977), p. 11. See also: V. M. Allison and Frederick E. Sperry, The Dynamics of Microfilm (Bethesda, Maryland: ERIC Document Reproduction Service, ED 051 651, 1971), p. 5; Elaine S. Friedman, "Library Applications of Computer Output Microfilm: An Annotated Bibliography," Special Libraries 68 (December 1977):447; U.S., General Services Administration, Records Management Handbook: Computer Output Microfilm (Washington, D.C.: Government Printing Office, 1975), p. 1.

[2]John North, "Card Catalog to COM," Library Journal 102 (October 15, 1977):2133; J. McRee Elrod, "Is the Card Catalogue's Unquestioned Sway in North America Ending?" Journal of Academic Librarianship 2 (March 1976):4-8.

[3]Doris Bolef, "Computer-Output Microfilm," Special Libraries 65 (April 1974):169.

[4]Ibid.; Carl Spaulding, ed. "Reduction Without Tears: A Primer on COM (Computer Output Microfilm), An Alternative to Computer Printout," American Libraries 7 (July/August 1976): 468.

[5]Spaulding, p. 468; Allison, p. 6.

[6]William Saffady, Computer-Output Microfilm: Its Library Applications (Chicago: American Library Association, 1978), p. 97; William Saffady, "A Computer Output Microfilm Serials List for Patron Use," Journal of Library Automation 7 (December 1974):265; Philip J. Schwarz, COM: Decisions and Applications in a Small University Library (Bethesda, Maryland: ERIC Document Reproduction Service, ED 135 391, 1976), pp. 7, 10, 14.

[7]Schwarz, pp. 10, 14.

[8]Virginia Gillham and John B. Clark, Administrative and Bibliographic Uses of COM (Computer Output Microfilm) in an Academic Library, a product of the 7th Ontario Universities Computing Conference, Waterloo, Ontario, June 2-4, 1976 (Bethesda, Maryland: ERIC Document Reproduction Service, ED 127 914, 1976), p. 7; Schwarz, p. 5; North, p. 2134; See also: Carolyn M. Cox and Bonnie Juergens, Microform Catalogs: A Viable Alternative for Texas Libraries (Bethesda, Maryland: ERIC Document Reproduction Service, ED 149 739, 1977).

[9]Bolef, p. 172.

[10]Spaulding, p. 468; Records Management Handbook: Computer Output Microfilm, p. 4.

[11]Richard W. Meyer and John F. Knapp, "COM Catalog Based on OCLC Records," Journal of Library Automation 8 (December 1975):320; Bolef, p. 171; Spaulding, p. 468.

[12]Schwarz, p. 5.

[13]Saffady, Computer Output Microfilm: Its Library Applications, p. 66.

[14]Gillham, p. 8.

[15]Computer Output Microfilm (COM): An Alternative to Card Catalogs for SOLINET Members, p. 6; Gillham, p. 4; Schwarz, p. 5.

[16]Brian Aveney and Mary Fischer Ghikas, "Reactions Measured: 600 Users Meet the COM Catalog," American Libraries 10 (February 1979):83; Ellen Altman, "On My Mind . . . Reactions to a COM Catalog," Journal of Academic Librarianship 3 (November 1977): 267.

[17]Altman, p. 267.

[18]Aveney, p. 83; North, p. 2134.

[19]John Kenneth Bierman, "Automated Alternatives to the Card Catalog," Catholic Library World 47 (September 1975):74-75; Association of Research Libraries, The Future of the Card Catalogs: Report of a Program Sponsored by the Association of Research Libraries, January 18, 1975, Washington, D.C.: Association of Research Libraries, 1975.